



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/558,386

11/29/2005

Ahmed Kaddani

43315-225720

4157

26694

7590

05/21/2010

VENABLE LLP

P.O. BOX 34385

WASHINGTON, DC 20043-9998

EXAMINER

DANG, KET D

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

05/21/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/558,386 | Applicant(s) KADDANI ET AL. | |
| | Examiner KET D. DANG | Art Unit 3742 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 13-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 13-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>03/29/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 29, 2010 has been entered.

This office action is responsive to the amendment after final filed on March 11, 2010. As directed by the amendment: claims 1-5 have been amended, claims 6-9 have been cancelled and claims 10-12 have been withdrawn. Thus, claims 1-5 and 13-15 are presently pending in this application.

Response to Amendment/Arguments

2. Applicant's amendments/arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a) because the reference number (30) in figure 4 was not described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in

Art Unit: 3742

the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The title of the invention “Welding Process” is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Tuning Arc Welding Process Utilizing Calibration and Simulation.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "a control system of a robotic arc-welding station" at line 5 in the claim. It is unclear and indefinite to the relationship between "a control system of a robotic arc-welding station" and "a control system" at line 2 in claim 1 and to whether they are the same or different. Further clarification is required to either further differentiate (a control system of a robotic arc-welding station) or provide proper antecedent basis.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-5 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rappl et al. (US Pub. No. 2003/0052108 A1) in view of Schow (US 3867769) and Kaddani et al. (WO 002078891 A1).

Art Unit: 3742

Regarding claims 1-2, 5, and 14, Rappl et al disclose a method of tuning an arc welding system 100 (Fig. 1) (para. 0032) comprising an electric circuit (para. 0029) including a power source 101 (Fig.1) (Abstract), a control system 108 (Fig. 1) including computer means (para. 0035) and memory means (para. 0026); calibrating (abstract) and feeding 114 (fig. 1) (para. 0032, 0038, and 0041) system input parameters; calculating tuning parameter values based on the system input parameters (Abstract) (para. 0009-0010) by using the comparison between predetermined parameter values and measured parameter values of the arc welding system 100 (fig. 1); and tuning the arc welding system by implementing the tuning parameter values into the control system (para. 0003).

With respect claims 3-4, Rappl et al. discloses tuning parameter values such as current, voltage, power, arc length, pulse width, wire feed speed, etc. (para. 0002, 0023).

With respect to claim 13, Rappl et al. discloses input unit 114 (fig. 1), a control system 108 (Fig. 1), and implementing unit (para. 0003).

With respect to claim 15, Rappl et al. disclose the metal transport between the electrode X (Fig. 1 below) and the workpiece Y (Fig. 1 below); and parameter values for properties related to the power source 102/104/106 (fig. 1), a wire 112 (fig. 1), and a weld profile (see figure 1 below, para. 0002, and 0032).

Rappl discloses all of the limitations of the claimed invention as set forth above, except for a simulation model; a first calibration mode comprising: short-circuiting the electric circuit over the an arc; sending a controllable current and voltage through the

Art Unit: 3742

system; and measuring the resistances and the inductances of the electric circuit, wherein the model parameters of the electric circuit comprise inductance and resistance of a first electric path, inductance and resistance of a second electric path, current and voltage of a process mode, and a correspondent behavior of the power source.

However, a simulation model is known in the art. Schow, for example, teaches arc welding simulator 10 (fig. 1) (abstract; col. 4, lines 8-14). Schow also teaches calibrating the simulation model by measuring the system input parameters (col. 2, lines 4-66). Schow further teaches such a configuration provides for teaching welder trainees how to arc weld quality welds resulting in significant savings of time and material (abstract) and providing an apparatus for training welders that is most efficient and economical, and which will reduce the training time period and permit uninterrupted practice (col. 3, lines 10-14).

Similarly, a first calibration mode comprising: short-circuiting the electric circuit over the an arc; sending a controllable current and voltage through the system; and measuring the resistances and the inductances of the electric circuit, wherein the model parameters of the electric circuit comprise inductance and resistance of a first electric path, inductance and resistance of a second electric path, current and voltage of a process mode, and a correspondent behavior of the power source are known in the art. Kaddani, for example, teaches a first calibration mode comprising: short-circuiting the electric circuit over the an arc; sending a controllable current and voltage through the system; and measuring the resistances and the inductances of the electric circuit, wherein the model parameters of the electric circuit comprise inductance and resistance

Art Unit: 3742

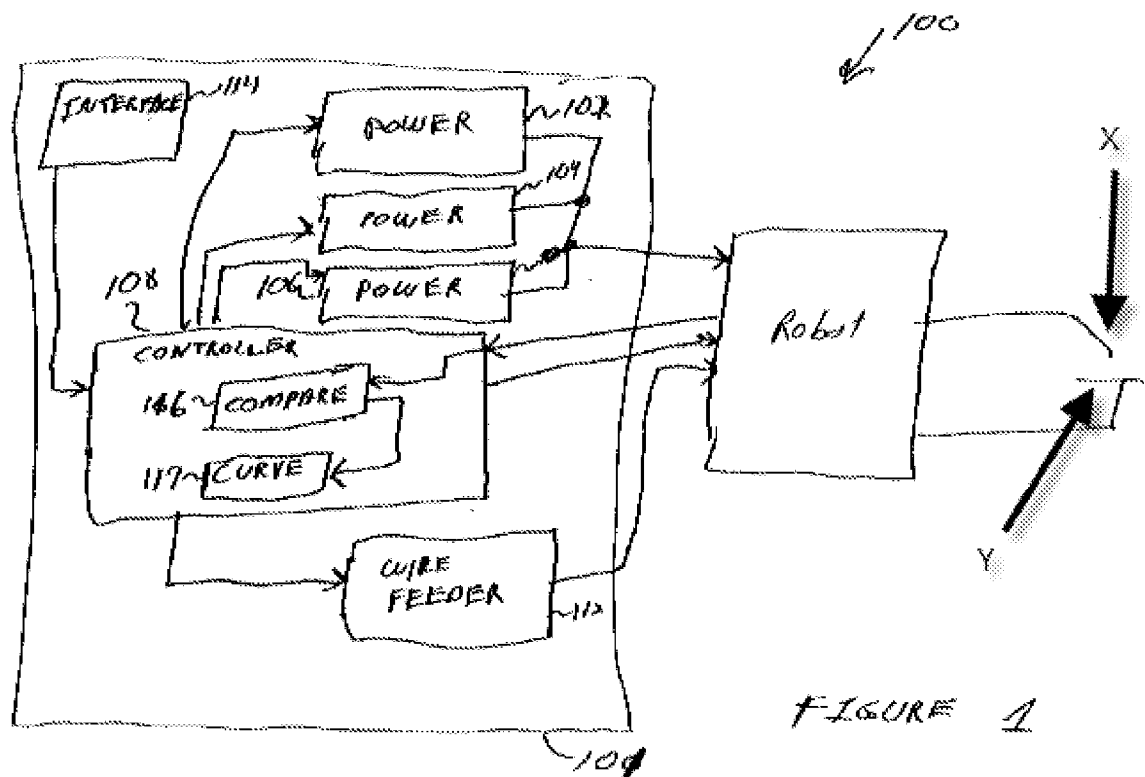
of a first electric path, inductance and resistance of a second electric path, current and voltage of a process mode, and a correspondent behavior of the power source (page 3, lines 26 – page 4, lines 23; page 16, lines 13-29; page lines 3-8) . Kaddani further teaches such a configuration provides a method for controlling an arc welding equipment, which method enabling that the arc welding equipment may be controlled during a welding operation by adjusting at least one welding parameter determined without the need of measurements of the welding process or repeated welding experiments prior to welding (page 3, lines 26-31) and a method for simulating an arc welding process without the need of measurements of the corresponding real welding process or repeated welding experiments (page 4, lines 20-24).

It is also known that such a configuration provides a means to eliminate subjective assessment and bias from the welders, and improve quality of welding. It would have been obvious to one of ordinary skill in the art to modify Rappl with a welding electrode simulator of Schow in order to provide for teaching welder trainees how to arc weld quality welds resulting in significant savings of time and material (abstract) and providing an apparatus for training welders that is most efficient and economical, and which will reduce the training time period and permit uninterrupted practice.

In addition, it would have been obvious to one of ordinary skill in the art to modify Rappl with the features set forth above of Kaddani in order to provide a method for controlling an arc welding equipment, which method enabling that the arc welding equipment may be controlled during a welding operation by adjusting at least one

Art Unit: 3742

welding parameter determined without the need of measurements of the welding process or repeated welding experiments prior to welding and a method for simulating an arc welding process without the need of measurements of the corresponding real welding process or repeated welding experiments.



Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Denison (US 4452589) discloses arc welding simulator. Burr (US 4897521) discloses weld arc simulator. Paton et al. (US 4716273) discloses electric-arc

Art Unit: 3742

trainer for welders. And Puschner (US 4201906) discloses method and apparatus for arc welding.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KET D. DANG whose telephone number is (571) 270-7827. The examiner can normally be reached on Monday - Friday, 7:30 - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoang Tu can be reached on (571) 272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KET D DANG/
Examiner, Art Unit 3742
May 14, 2010

/Stephen J Ralis/
Primary Examiner, Art Unit 3742